

Risk factors for West Nile virus seropositivity of equines in Guadeloupe

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Abstract

West Nile virus (WNV) activity was first observed on equines in Guadeloupe in 2002, and a high seroprevalence was found in 2003. We tried to determine individual and environmental factors associated with the risk of West Nile virus seropositivity in 2002-2003. Information was retrospectively collected from 369 equines out of an estimated total population of less than 500. Thirty-three environmental and individual variables were tested by univariate analysis for independence from the serological status. Results of univariate and correlation analyses were used to select variables that were integrated into a logistic regression. All analyses were done using R package. Univariate analyses found fourteen variables associated with risk and five with protection. The best fitted model was chosen using the Akaike criterion and included six explanatory variables. According to this model, horses living in the proximity (distance less than 1.5 km) of swamp forests (a large coastal formation behind mangroves) had a higher risk for WNV seropositivity ($p < 0.001$), as did horses remaining outside after dusk ($p = 0.001$). On the other hand, horses living in the proximity of “ouassous” shrimp (*Macrobrachium rosenbergii*) ponds had a lower risk ($p < 0.001$), as did horses living in the proximity of sugar cane fields ($p < 0.001$). Identification of risk factors and models for WNV is useful for predicting future emergence sites of the disease in unaffected Neotropical islands.